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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/500,380	02/08/2000	Kenneth E. Knapp	RR-1645	2519

7590 07/16/2003

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EXAMINER	
RENNER, CRAIG A	

ART UNIT	PAPER NUMBER
2652	18

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/500,380	Knapp et al.
Examiner	**Art Unit**
Craig A. Renner	2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *6 May 2003*

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 12, 82-101, and 121-134* is/are pending in the application.

4a) Of the above, claim(s) *128-134* is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 12, 82, 84-92, 94-101, 121, and 123-127* is/are rejected.

7) ☒ Claim(s) *83, 93, and 122* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☒ The proposed drawing correction filed on *27 Jun 2002* is: a) ☒ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Election/Restriction

1. Applicant's election without traverse of "Invention I, corresponding to claims 1, 12, 82-101 and 121-127" in Paper No. 17, filed 6 May 2003, is acknowledged. Accordingly, claims 128-134 are withdrawn from further consideration pursuant to 37 C.F.R. § 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 27 June 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 U.S.C. § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. § 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. § 122(b). Therefore, this application is examined under 35 U.S.C. § 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. § 102(e)).

4. Claims 1, 12, 82, 84-92, 95-101, 121 and 123-127 are rejected under 35 U.S.C. § 102(e) as being anticipated by Sasaki (US 6,330,127).

With respect to claims 1, 82 and 84-90, Sasaki (US 6,330,127) teaches a transducer (FIGS. 38(A-B), for instance) comprising a plurality of solid layers (includes 7, 61a, 61b, 63a, 63b and 68) including a magnetically soft loop (includes 7, 61a, 61b, 63a, 63b and 68) substantially encircling an electrically conductive coil section (includes 66) and terminating in leading and trailing magnetically soft layers (61a and 63a, respectively) separated by an amagnetic gap layer (9), the trailing magnetically soft layer being oriented substantially perpendicular to the amagnetic layer (as shown in FIG. 38B, for instance), wherein the trailing magnetically soft layer has a width measured in a direction substantially parallel to the amagnetic layer, the width being less than about four hundred nanometers and greater than about twenty angstroms (lines 20-21 in column 22, for instance) [as per claim 1]; wherein a distance between the magnetically soft layers is not substantially greater than the width (i.e., the distance between the magnetically soft layers is not greater than the width, as shown in FIG. 38B, for instance) [as per claim 82]; wherein the trailing magnetically soft layer contains a refractory metal (lines 18-22 in column 13, for instance) [as per claim 84]; wherein the trailing magnetically soft layer contains material having a B_s higher than that of Permalloy (lines 18-22 in column 13, for

instance) [as per claim 85]; wherein the leading magnetically soft layer is substantially perpendicular to the trailing magnetically soft layer (as shown in FIG. 38B, for instance) [as per claim 86]; wherein the trailing magnetically soft layer contains material (as shown in FIG. 38B, for instance) [as per claim 87]; wherein the transducer further comprises a magnetoresistive sensor layer (5) disposed adjacent the leading magnetically soft layer and oriented substantially perpendicular to the trailing magnetically soft layer (as shown in FIG. 38B, for instance) [as per claim 88]; wherein the magnetically soft loop includes a magnetically soft trailing yoke layer (68) that adjoins the trailing magnetically soft layer (as shown in FIG. 38A, for instance) [as per claim 89]; and wherein the trailing yoke layer extends further in the direction substantially parallel to the amagnetic layer than in a direction substantially perpendicular to the amagnetic layer and aligned with the leading and trailing magnetically soft layers (as shown in FIGS. 38A and 20, for instance) [as per claim 90].

With respect to claims 12, 91-92 and 95-101, Sasaki (US 6,330,127) teaches a transducer (FIGS. 38(A-B), for instance) comprising a plurality of solid layers (includes 5, 7, 61a, 61b, 63a, 63b and 68), including a magnetoresistive sensor layer (5) and a magnetically soft loop (includes 7, 61a, 61b, 63a, 63b and 68) substantially encircling an electrically conductive coil section (includes 66) and terminating adjacent a media-facing surface in leading and trailing magnetically soft layers (61a and 63a, respectively) separated by an amagnetic gap layer (9), the trailing magnetically soft layer being oriented substantially perpendicular to the magnetoresistive sensor layer (as shown in FIG. 38B, for instance) and having a width measured in a direction

substantially parallel to the magnetoresistive sensor layer, the width being less than about four hundred nanometers and greater than about twenty angstroms (lines 20-21 in column 22, for instance) [as per claims 12 and 98-99]; wherein the trailing magnetically soft layer is substantially perpendicular to the amagnetic layer (as shown in FIG. 38B, for instance) [as per claim 91]; wherein the trailing magnetically soft layer is substantially perpendicular to the leading magnetically soft layer (as shown in FIG. 38B, for instance) [as per claim 92]; wherein the width of the trailing magnetically soft layer is not substantially greater than a thickness of the amagnetic layer (i.e., the width of the trailing magnetically soft layer is relatively not significantly greater than a thickness of the amagnetic layer, as shown in FIG. 38B, for instance) [as per claim 95]; wherein the trailing magnetically soft layer contains material having a B_s higher than that of Permalloy (lines 18-22 in column 13, for instance) [as per claim 96]; wherein the trailing magnetically soft layer contains a refractory metal (lines 18-22 in column 13, for instance) [as per claim 97]; wherein the magnetically soft loop includes a magnetically soft trailing yoke layer (68) that adjoins the trailing magnetically soft layer (as shown in FIG. 38A, for instance) [as per claim 100]; and wherein the trailing yoke layer extends further in the direction substantially parallel to the magnetoresistive sensor layer than in a direction substantially perpendicular to the magnetoresistive sensor layer and aligned with the leading and trailing magnetically soft layers (as shown in FIGS. 38A and 20, for instance) [as per claim 101].

With respect to claims 121 and 123-127, Sasaki (US 6,330,127) teaches a transducer (FIGS. 38(A-B), for instance) comprising a magnetoresistive sensor layer (5), a magnetically soft

loop (includes 7, 61a, 61b, 63a, 63b and 68) disposed adjacent to the magnetoresistive sensor layer, traversed by an electrically conductive coil section (includes 66) and including magnetically soft leading and trailing pole-tips (61a and 63a, respectively) disposed adjacent to a media-facing surface, the trailing pole-tip aligned with the magnetoresistive sensor layer along a longitudinal direction (as shown in FIG. 38B, for instance) and having a width measured in a track-width direction that is perpendicular to the longitudinal direction, the longitudinal and track-width directions being substantially parallel to the media-facing surface, the width being less than four hundred nanometers and greater than twenty angstroms (lines 20-21 in column 22, for instance) [as per claim 121]; wherein the leading and trailing pole-tips are separated by a submicron nonferromagnetic gap layer (9, lines 1-3 in column 21, for instance) [as per claim 123]; wherein the trailing pole-tip consists essentially of material (as shown in FIG. 38B, for instance) [as per claim 124]; wherein the trailing pole-tip contains material having a B_s higher than that of Permalloy (lines 18-22 in column 13, for instance) [as per claim 125]; wherein the magnetically soft loop includes a magnetically soft yoke layer (68) adjoining the trailing pole-tip (as shown in FIG. 38A, for instance) [as per claim 126]; and wherein the yoke layer extends further in the track-width direction than in the longitudinal direction (as shown in FIGS. 38A and 20, for instance) [as per claim 127].

As the claims are directed to a transducer, per se, the method limitations appearing in line 2 in each of claims 87, 98-99 and 124 can only be accorded weight to the extent that they affect the structure of the completed transducer. Note that "[d]etermination of patentability in 'product-

by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "vacuum-deposited", "sputter-deposited", and "sputtered", for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process", *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985). Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "vacuum-deposited", "sputter-deposited", and "sputtered", for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

5. Claims 1, 12, 82, 84-88, 91-92, 94-99, 121 and 123-125 are rejected under 35 U.S.C. § 102(e) as being anticipated by Sasaki (US 6,583,954).

With respect to claims 1, 82 and 84-88, Sasaki (US 6,583,954) teaches a transducer (FIGS. 7(A-B), for instance) comprising a plurality of solid layers (includes 9 and 16), including a magnetically soft loop (includes 9 and 16) substantially encircling an electrically conductive coil section (includes 12 and 14) and terminating in leading and trailing magnetically soft layers (9 and 16, respectively) separated by an amagnetic gap layer (10), the trailing magnetically soft layer being oriented substantially perpendicular to the amagnetic layer (as shown in FIG. 7B, for instance), wherein the trailing magnetically soft layer has a width measured in a direction substantially parallel to the amagnetic layer, the width being less than about four hundred

nanometers and greater than about twenty angstroms (line 49 in column 16, and as shown in FIG. 24, for instance) [as per claim 1]; wherein a distance between the magnetically soft layers is not substantially greater than the width (i.e., the distance between the magnetically soft layers is not greater than the width, as shown in FIG. 7B, for instance) [as per claim 82]; wherein the trailing magnetically soft layer contains a refractory metal (lines 13-17 in column 10, for instance) [as per claim 84]; wherein the trailing magnetically soft layer contains material having a B_s higher than that of Permalloy (lines 13-17 in column 10, for instance) [as per claim 85]; wherein the leading magnetically soft layer is substantially perpendicular to the trailing magnetically soft layer (as shown in FIG. 7B, for instance) [as per claim 86]; wherein the trailing magnetically soft layer contains material (as shown in FIG. 7B, for instance) [as per claim 87]; and wherein the transducer further comprises a magnetoresistive sensor layer (5) disposed adjacent the leading magnetically soft layer and oriented substantially perpendicular to the trailing magnetically soft layer (as shown in FIG. 7B, for instance) [as per claim 88].

With respect to claims 12, 91-92 and 94-99, Sasaki (US 6,583,954) teaches a transducer (FIGS. 7(A-B), for instance) comprising a plurality of solid layers (includes 5, 9 and 16), including a magnetoresistive sensor layer (5) and a magnetically soft loop (includes 9 and 16) substantially encircling an electrically conductive coil section (includes 12 and 14) and terminating adjacent a media-facing surface in leading and trailing magnetically soft layers (9 and 16, respectively) separated by an amagnetic gap layer (10), the trailing magnetically soft layer being oriented substantially perpendicular to the magnetoresistive sensor layer (as shown in FIG.

7B, for instance) and having a width measured in a direction substantially parallel to the magnetoresistive sensor layer, the width being less than about four hundred nanometers and greater than about twenty angstroms (line 49 in column 16, and as shown in FIG. 24, for instance) [as per claims 12 and 98-99]; wherein the trailing magnetically soft layer is substantially perpendicular to the amagnetic layer (as shown in FIG. 7B, for instance) [as per claim 91]; wherein the trailing magnetically soft layer is substantially perpendicular to the leading magnetically soft layer (as shown in FIG. 7B, for instance) [as per claim 92]; wherein the width of the trailing magnetically soft layer is less than about two hundred nanometers (i.e., the width of the trailing magnetically soft layer is less than slightly greater than two hundred nanometers, line 49 in column 16, and as shown in FIG. 24, for instance) [as per claim 94]; wherein the width of the trailing magnetically soft layer is not substantially greater than a thickness of the amagnetic layer (i.e., the width of the trailing magnetically soft layer is relatively not significantly greater than a thickness of the amagnetic layer, as shown in FIG. 7B, for instance) [as per claim 95]; wherein the trailing magnetically soft layer contains material having a B_s higher than that of Permalloy (lines 13-17 in column 10, for instance) [as per claim 96]; and wherein the trailing magnetically soft layer contains a refractory metal (lines 13-17 in column 10, for instance) [as per claim 97].

With respect to claims 121 and 123-125, Sasaki (US 6,583,954) teaches a transducer (FIGS. 7(A-B), for instance) comprising a magnetoresistive sensor layer (5), a magnetically soft loop (includes 9 and 16) disposed adjacent to the magnetoresistive sensor layer, traversed by an

electrically conductive coil section (includes 12 and 14) and including magnetically soft leading and trailing pole-tips (9 and 16, respectively) disposed adjacent to a media-facing surface, the trailing pole-tip aligned with the magnetoresistive sensor layer along a longitudinal direction (as shown in FIG. 7B, for instance) and having a width measured in a track-width direction that is perpendicular to the longitudinal direction, the longitudinal and track-width directions being substantially parallel to the media-facing surface, the width being less than four hundred nanometers and greater than twenty angstroms (line 49 in column 16, and as shown in FIG. 24, for instance) [as per claim 121]; wherein the leading and trailing pole-tips are separated by a submicron nonferromagnetic gap layer (10, lines 17-19 in column 10, for instance) [as per claim 123]; wherein the trailing pole-tip consists essentially of material (as shown in FIG. 7B, for instance) [as per claim 124]; and wherein the trailing pole-tip contains material having a B_s higher than that of Permalloy (lines 13-17 in column 10, for instance) [as per claim 125].

As the claims are directed to a transducer, per se, the method limitations appearing in line 2 in each of claims 87, 98-99 and 124 can only be accorded weight to the extent that they affect the structure of the completed transducer. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "vacuum-deposited", "sputter-deposited", and "sputtered", for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process." See *In re Thorpe, et al.*, supra. Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in

terms of how it is made [i.e., "vacuum-deposited", "sputter-deposited", and "sputtered", for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations." See *In re Hirao and Sato*, supra.

Pertinent Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Takano et al. (US 5,850,326), which teaches a transducer having a trailing magnetically soft layer pole-tip width down to 0.25 μm; and Kamijima (US 6,483,664), which teaches a transducer having a trailing magnetically soft layer pole-tip width down to about 0.4 μm.

Allowable Subject Matter

7. Claims 83, 93 and 122 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

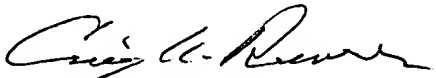
8. Applicant's arguments filed 27 June 2002 with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning the above referenced application should be directed to the examiner, Craig A. Renner, whose telephone number is (703) 308-0559, and whose facsimile number is (703) 872-9314. The examiner can normally be reached Tuesday through Friday from 7:30 a.m. to 6:00 p.m. E.S.T.



Craig A. Renner
Primary Examiner
Art Unit 2652

CAR
July 12, 2003